

NUCLEAR PHYSICS

Atomic Storage Batteries

There is a possibility that a large variety of radioactive isotopes of the chemical elements may be produced by the pound from atomic piles.

► **PACKAGED ATOMIC POWER** may prove to be the way that nuclear energy may be applied to jet planes and rockets, flung at long range at an enemy.

Or the glowing "hot" bundles of radiating material, manufactured in the atomic piles as a by-product of bomb material production, may provide concentrated power sources for remote installations for peaceful purposes, such as heat for polar living.

When Atomic Energy Commissioner Lewis L. Strauss stated recently that atomic "storage batteries" might be made, he was referring to the possibility of the artificial production of large amounts of radioactive material by the intense bombardment in the atomic chain reactors at Hanford, Oak Ridge and elsewhere.

The same effect might be accomplished if a dozen pounds or so of pure radium salts were brought together in one place. Mme. Curie saw the radium bromide she produced glow visibly in the dark with its intense radium. Heat, as well as intense and dangerous gamma and other radiation, is produced by radioactivity, natural as well as artificial.

No one has had or has ever hoped to have pounds of radium, but the atomic piles give the practical possibility of producing by the pound, if needed, a large variety of radioactive isotopes of the chemical elements. Some 600 have already been produced. Of these a score or so might be expected to be useful in the proposed atomic storage batteries.

Most conveniently, these artificially radioactive elements destroy their activity in half-life times ranging from fractions of a second to thousands of years. They literally convert their substance into radiation, and the scientists rate their permanence in the time that is required for half their radioactivity to disappear.

Take sodium, for instance, a common metallic element that is in the sodium chloride of common salt. It has at least three radioactive varieties, created by neutron bombardment, which have half-lives of 23 seconds, 14.8 hours, and three years.

If this element were the active part of an atomic storage battery, the battery could be charged for a very short time or a relatively long time.

The users of such an atomic storage battery could not change its rate of output or vary its length once it was made. This is quite different from the atomic pile itself that depends upon fission of uranium or plutonium by neutrons. The pile can be

speeded up or slowed down by the way it is operated, the fastest operation being an atomic bomb that explodes in a fraction of a second. Radioactive decay follows a rate that cannot change by similar devices.

Very difficult problems remain before artificial radioactivity can be applied practically for power purposes, just as the

MEDICINE

Flour Freed of Danger

The potentially dangerous nitrogen trichloride treatment of flour which has caused fits in dogs, will be discarded soon for a safer process.

► **FLOUR** for the staff of life, and for macaroni, noodles and pastry as well as bread and biscuits, will soon be freed from the danger of causing fits, in man or dog.

A U. S. Food and Drug Administration order for a change from the potentially dangerous "agene," or nitrogen trichloride, to chlorine dioxide for treating flour from certain kinds of wheat is expected soon.

Sir Edward Mellanby, distinguished English nutritionist who just two years ago discovered the possible danger of agenzized flour and bread, came over from London to give a first hand report of his findings at the Food and Drug Administration hearings.

"Running fits," or canine hysteria, he found, was produced in dogs by feeding them flour treated with nitrogen trichloride. This chemical has been widely used for the past 25 years to age flour from certain kinds of wheat so it will make better bread.

The possibility that the agenzized flour might be causing epilepsy or some kind of nervous disorder in humans alarmed everyone, medical and health scientists as well as the general public.

No hint of any damage to humans from this flour had come in all the 25 years it has been used. Special studies were made in which the agenzized flour was fed human volunteers in amounts and for periods of time that would unfailingly produce "running fits" in dogs. No symptoms and no changes in brain waves, suggesting a tendency to convulsions or fits, were found.

Nevertheless, our Food and Drug Administration, the flour millers of the nation, and manufacturers of "agene," decided to play it safe. So instead of nitrogen trichloride, flour in future will be treated with chlorine dioxide. So far as can be found

methods of applying chain reactors to power production are far from solution. The same protection of human beings and other substances against the lethal and damaging radiations must be achieved, although it might be simpler in some respects for artificial radioactivity.

The conversion of radiation into heat and the transfer of the intense heat and radiation into the kind that can be used practically are major problems, that may take years to solve.

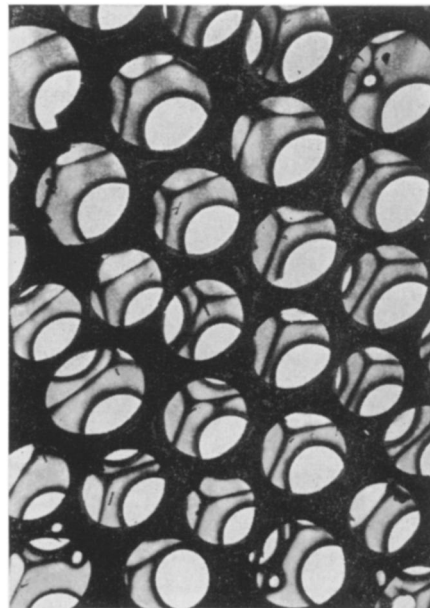
Imagine having an intense energy source in little weight and try to guess what it might mean to rockets and jets, unmanned and radio controlled, aimed at an earthly or even a moon target.

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by scientific studies, this chemical has no harmful effect on humans or dogs or other animals.

Technically, the Food and Drug order for the change will come in the form of an announcement of an amended standard for flour.

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ELECTRONIC PORTRAIT — This shows the skeleton of a diatom, a microscopic plant used in beer filters, magnified 13,500 times by the electron microscope in the General Electric Research Laboratory.